The Philosophy of the Implicit An Introduction to the Work of Gene Gendlin

Robert Parker, PhD

Beginnings

The Philosophy of the Implicit is a new way of thinking which reunites science and spirituality, carrying each forward in new and exciting ways. Although the core concepts are very simple, they are difficult to explain, because the old ways of thinking are implicit in the words we use to describe the new thinking. Perhaps the best way to describe the philosophy is to describe its beginning, with the story of how a 12 year old boy entered the first grade and what he learned there.

The boy was Gene Gendlin. His family had just moved from Austria to North America, and the young boy needed to learn English fast. Although his new school did not have classes in English as a second language, they did have a first grade teacher who was supposed to be very good, and who might also have extra time to teach Gene the language of his new country. So at age 12, he entered a class of six-year-olds and began learning English.

One day, the teacher noticed that Gene was experiencing the world in German, and then translating into English. For example, he would see a "stuhl" and then say "chair". She taught him a simple lesson: that he didn't need to translate, that what he was looking at could be a "chair" right from the beginning. And when he tried to think in English, Gene became aware that he had always known what the thing was, independent of the words. In the place of "das stuhl" there was a familiar "feel" that he had taken for granted until then. He had always known what it was and how to use it, in a way that didn't depend on words.

As Gendlin grew older, he noticed this implicit knowing more often, and he began to think more articulately about it. Thus a first grade teacher launched a 12-year-old boy onto a life-long study of the relationship between language, experiencing, and meaning.

The Implicit

The story of how a young boy learned English illustrates something very basic about the relationship between language and experiencing. Language is not a self-contained symbol system. Language functions in a larger context of living interaction with the world. Because this interaction is us, we "know" it in a very basic way; we "know" what we are doing and how things are going, without necessarily using words. This preverbal "knowing" is implicit in everything we do. We don't usually notice it, because we are busy doing other things; but if we look for it, this preverbal "knowing" can form as a kind of "feel" for what we are doing.

For example, we do many things without thinking about how we do them. Driving a car in traffic, for example, is a very complex activity; but most people can drive while they are absorbed in a conversation or listening to the radio. How is this possible? . At first, it might seem that we don't think about such things because they are so simple, but in fact the opposite is

true. We don't think about them because they are too intricate to be described in words. Imagine, for example, trying to teach someone over the phone how to drive a car. The person has never been in a car before, but she has a cell phone, and she is very good at reporting what's going on and following your instructions; and you are going to explain when and how to change lanes on a crowded interstate.

Even simple skills like driving are far too complex or intricate for words. But we still know how to do these things, and if we look for it, we can experience this knowing as a kind of "feel" for what we are doing. This "feel" embodies huge amount of information, but it isn't conceptual; we don't remember how to walk or drive, we just do it. It's almost as if our bodies know how to do these things, and we don't.

The example of driving is hardly unique; most of what we do is like driving. When we talk, we somehow "know" what to say next. Our words come out with precise grammar, syntax, and meaning; and if one word isn't quite right, we "feel" it immediately and correct ourselves. We relate differently to different friends; each relationship has its own rich intricacy, which could never be described in words, and yet we "know" what to do or say, usually without even thinking. In our jobs or professions, we have a "feel" for how to solve certain kinds of problems. Living depends on, *is*, this larger context of implicit "knowing."

How is it possible to do so many complex things without thinking? It is possible because we are alive. Living is a process of ongoing interaction with the environment, and this process is more basic and more intricate than the process of thinking. A plant interacts with its environment in ways that humans are only beginning to understand; and yet the plant does this easily without concepts, or a brain, or even a nervous system. Humans are more complex than plants, and we, too, interact with our environment in ways that are more intricate than concepts. We breathe, digest food, walk, talk, drive, have relationships, and so on, without explicit rules; and we don't need explicit rules anymore than the plant does. Most of our living is more intricate than concepts and goes on quite well without them.

Computers are a good illustration of this. Because computers can only follow explicit rules, they can teach us a lot about both the power and the limitations of explicit knowledge. For example, several years ago there was great interest in expert systems. The idea was to conduct extensive interviews with experts in various fields, and to distill the experts' knowledge into computer programs. But after years of trying, it became apparent that much of what experts know cannot be expressed in rules. As a result, we hear very little about expert systems anymore. (cf. Dreyfus, 1992; Dreyfus, H.L., & Dreyfus, S. E., 1986)

Thus, we "know" more about reality than we can say with concepts, because our living in the world is much more intricate than concepts.

Relativism

As Gendlin grew older, he began studying philosophy and he learned that serious errors can result when we try to think without acknowledging the implicit. For example, at that time (and still today) many people were concerned about relativism. The basic problem is that all "truths"

are the developments of a particular culture and history; so although I might want to believe that my particular religion, ethics, or science is universally true, it is not hard to find people who have different beliefs which they think are universally true. Even in science, new ways of thinking cannot be evaluated on purely objective criteria (Kuhn, 1970). So it appears that all beliefs are influenced by culture and history, and "truth" is always relative to a particular social context.

Gendlin thought that relativism is correct as far as it goes, but he realized it doesn't go far enough. Certainly, our beliefs are influenced by where we grew up; but many of our beliefs work reasonably well anyway. If everything were relative, we shouldn't be able to build airplanes and fly to conferences to talk about relativism.

The problem with the relativists' argument is that we know more than explicit concepts. We can't conceptualize reality perfectly or completely, but we are living in it and our living is also a kind of knowing. Of course, anything that can be said explicitly must be a development of language, culture, and history, and might be said differently in a different context. But language, culture, history, and concepts all develop from the intricacy of living, and not the other way around.

For example, our concepts about why things fall has changed significantly over the last few centuries: In 1400, things fell because the elements earth and water "wanted" to go down; in 1700, they fell because of gravity; in the 1900s, they fell because of space-time curvature, and later because of gravitons. But as the explicit "truth" changes due to culture and history, things continue to fall.

This example points to something which is very basic, and difficult to say in words. Concepts like gravity are indeed developments of culture and history, but that means that they are also developments of our living in the world. The process of living is an ongoing interaction, an intricate "knowing" of the world that is validated by the fact that we go on living. If there were no order, if everything was chaos, we would die. The fact that concepts always change, but we go on living, demonstrates an implicit order that is "more than" our concepts. Gendlin would call this order the *Implicit Intricacy*, or <u>The Responsive Order</u> (Gendlin, 1997).

Although basic to living, implicit knowing is often overlooked precisely because it is implicit. If we're not aware of it and we can't say it in words, then it doesn't seem like real knowledge. Gendlin would explore this problem further, but he already knew that implicit knowing doesn't have to be outside awareness. He knew that if we look for it, this knowing appears as a kind of "feel" for different situations, people, or things. And because it is so much richer than explicit concepts, this "feel" can be extremely useful in many situations. For example, Einstein wrote that as he worked on his general theory of relativity over 15 years, he was guided by a "feeling" for what the eventual solution would be.

As Gendlin pondered these issues, he came to a major discovery and an unlikely digression in his career.

Psychotherapy

Gendlin entered the graduate program in philosophy at the University of Chicago, hoping to learn more about the relationship between concepts and the Implicit. But to his dismay, no one there seemed to know what he was talking about. Everyone was absorbed in explicit concepts. Everything was either a "stuhl" or a "chair," so to speak, and any sign of the Implicit just meant that the concepts needed more work.

Gendlin wanted to observe how the Implicit functions in concept formation, and this wasn't going to happen in a philosophy department. But where could he look? People who were questioning their basic understanding of the world, might also be more aware of the Implicit. But where could he find such people? He guessed that people who were questioning at a deep level might be in emotional distress, and might be in therapy.

At that time, Carl Rogers was in charge of the Counseling Center at the University of Chicago. So one day, the originator of Client-Centered Therapy received a visit from a philosophy student. This student had no background in psychology, but he wanted to join Roger's clinic and be trained as a psychotherapist. Rogers agreed.

It was the beginning of a long and fruitful collaboration. Working with others on Roger's team, Gendlin showed that some psychotherapy clients do indeed refer to something beyond words, and that this referring could be reliably measured (Gendlin, E. T., Beebe, J., Cassens, J., Klein, M., & Oberlander, M., 1968). When clients referred to this "something," they experienced it as a "feel" or bodily awareness, which Gendlin called a *felt sense*. This felt sense was not a feeling like anger or sadness, but the intricate and preconceptual "knowing" that we all have of different situations. Not surprisingly, this awareness turned out to be extremely useful in psychotherapy: Gendlin found that the degree to which people referred to their felt sense in *the first two sessions* of therapy correlated with the ultimate success of therapy *one or two years later*! (This remarkable finding has been replicated 27 times since then; Hendricks, 2002).

But this latter finding raised a disturbing question: if you could tell after two sessions that someone wouldn't benefit from therapy, was it ethical to allow them to continue? Gendlin answered the question with further research. Together with co-workers, he found that clients could learn felt sense awareness, and he developed a procedure to teach it. Gendlin's procedure, which he called *Focusing*, has turned out to be extremely useful. Numerous studies have shown that felt sense awareness improves therapy outcome, and this finding holds across many forms of therapy and across a variety of cultures (<u>Hendricks, 2002</u>). Focusing is also useful outside of therapy; today it is practiced in <u>29 countries</u> worldwide by thousands of people who are not in therapy, but who find it helpful in areas ranging from <u>sports</u>, to <u>creative writing</u>, to <u>business</u>. Gendlin's book, *Focusing*, has sold over 400,000 copies and is printed in twelve languages.

In recognition of this work, Gendlin the philosopher became the first person to receive the Distinguished Psychologist of the Year award from the American Psychological Association. He also founded and edited a major psychological journal, and received other awards from the American Psychological Association.

But in spite of this recognition, Gendlin's work was widely misunderstood. In particular,

focusing is still often misunderstood as a way to "get in touch with your feelings". The reason for this misunderstanding is interesting. It has to do with the relationship between explicit concepts and implicit knowing. In particular, it has to do with a way of thinking that is at the root of modern civilization and yet is implicit for most people.

The Unit Model

Over the last few hundred years, our understanding of the world has been strongly influenced by a mathematical way of thinking that Gendlin calls the *unit model*. Mathematics is a very useful and powerful way of thinking, and it works because numbers have certain properties. Over many years, and particularly since the scientific revolution, the success of mathematical thinking has led us to ascribe mathematical properties to the world. At first, this was done heuristically, with an "as if" attitude (by Descartes, for example). But over hundreds of years, this way of thinking has been so successful that today it has acquired the status of common sense.

Gendlin describes the unit model in some detail; but stated simply, it involves two related assumptions. First, the unit model assumes the world is composed of separately existing units. In other words, units have separate identities which remain the same regardless of how they are moved around and combined. Secondly, the unit model assumes that units are inanimate. Units don't have their own desires and can't do whatever they want; instead, their behavior is determined by extrinsic causes, such as laws of nature.

Together, these two assumptions give us a very powerful way to think about the world; modern science and technology are living testimony to the power of this approach. And over hundreds of years, the continuing success of science has led both scientists and lay people to assume that the universe really is composed of separate inanimate parts. The unit model has become second nature to us, intuitively obvious. Today we often think of the unit model, not as an hypothesis, but as how things really are.

For this reason, it's good to remember that the unit model wasn't always intuitively obvious. It took the smartest minds in Europe thousands of years to create it, and they initially considered it a heuristic way of thinking, not a description of reality.

It's also good to remember that the unit model isn't reality. In fact, it is problematic to judge any theory on its supposed correspondence with reality. First of all, we don't have any independent way of measuring reality. Moreover, the history of science is a history of change, and there is no reason to think that any concept, theory, or model will remain true forever. But we can judge the unit model's validity from what we can do with it, and by that measure it is very useful and very valid. But in spite of its usefulness, the unit model has serious limitations.

Misapplying the Unit Model to Life

In particular, the unit model offers a very limited way of thinking about life. For example, living things are not made of separate inanimate parts. We can measure the human body in units and describe various parts, but this is just a simple way of conceptualizing something much more

intricate.

The digestive system, for example, isn't actually a separate entity. First of all, it is a process in which no "parts" stay the same; for example, new cells are constantly being created as old ones die. Further, the cells of the digestive system are in constant interaction with the rest of the body, so we would say in unit model terms that the digestive system involves many other systems; the nervous system, immune system, cell metabolism, endocrine system, and many more. But each of those systems involves the digestive system.

What we call different systems are really aspects of one living process, a human being. Different systems are identified by an observer, depending on that observer's interests; thus different anatomy charts actually divide the body up differently, depending on which system they are describing. Moreover, an observer can discover new systems by looking at the body in some new way. For example, our sense of psychological well being has a certain continuity and it both affects and is affected by other systems. So we might say we have discovered a new system, psychological well being; and we might study how that system affects other systems like digestion, and how those systems affect it. There is no objective determination regarding which systems exist and where their boundaries lie, because the determination depends in part on the interests and purposes of a human observer. We are the observer, and we are part of the process; so how we describe the process (what concepts we use, what systems we discover) will change according to our goals and purposes.

The issue of goals and purposes points to another limitation of the unit model when applied to life. Life is active, it is always in the midst of a next step. The next step could be photosynthesis, hunting for food, building a career, or finding the meaning of life; but it is always happening. Further, the next step is not a specific thing but a way forward. If one way forward is blocked, life finds another way, or it dies. What counts as a way forward and what doesn't emerges from the organism's ongoing interaction with the Implicit Intricacy; it is therefore more intricate than concepts, and cannot be formulated explicitly or specified in advance. It is *implied*.

Living is a continuous *implying*. For example, if you try walking in a natural way, each "part" of the process implies the next "part," so that if you try to freeze at any point, you risk falling over. An observer could think of walking as a series of separate "parts"; but such "parts" would have little in common with unit model parts. In the unit model, parts exist separately and are related by external causes; but in living (walking for example), "parts" exist only together, and their relationship or organization is formed internally by their implying of each other and of the next step in the process.

In short, living things have important qualities that cannot be described in unit model terms. This does not make the unit model invalid, it only means that the unit model is a way of thinking and that it isn't real in any ultimate sense. In Gendlin's terms, the Implicit Intricacy is always more than concepts; that is why science is always changing. So the problem is not in the unit model; the problem is in the fallacious assumption that if something can be measured in units, it is actually made of units.

A Paradox and its Consequences

Zeno illustrated this fallacy 2500 years ago with his dichotomy paradox: For an arrow to reach its target, it must first traverse half the distance between the archer and the target, then half the remaining distance, half of that distance, and so on to infinity. No matter how small the half distances become, it will take the arrow a certain amount of time to cross each one. But the number of half-distances is infinite, so no matter how small they become, the arrow will need an infinite amount of time to cross all of them. Therefore, the arrow can never reach its target.

Of course, we know that arrows reach their targets, so we know immediately that something must be wrong with Zeno's argument; and we quickly see that the problem is a misapplication of the unit model. Even though we can measure the arrow's path in units, the path is not actually made of units. The units are a useful way of thinking, but they aren't real. So the distance between the archer and the target remains whole and unchanged no matter how many times we divide it, and the arrow reaches its target unaffected by our measurements.

It is easy to see the faulty assumption in Zeno's dichotomy paradox; but consider what happens when the same erroneous assumption is presented in a different way. Instead of applying the unit model to a span of distance, apply it to people: Assume that human beings are a collection of inanimate parts. By definition, such parts don't have consciousness or volition. Therefore, we cannot have consciousness or volition: We are impossible.

If we suspected the unit model when it "proved" arrows don't reach their targets, we should be even more suspicious when it "proves" we are impossible. But instead, we have struggled for hundreds of years with a series of related paradoxes with names like "free will vs. determinism" and "the mind/body problem." Instead of questioning the unit model, we try to solve these modern versions of Zeno's Paradox by applying it ever more carefully; for example, by trying to create "scientific" explanations of consciousness by arranging the parts in complex patterns. But attempts to find "the ghost in the machine" must always fail, because machines by their nature exclude ghosts.

Our uncritical application of the unit model to ourselves has serious consequences. The unit model encourages us to think of ourselves mechanistically. Thus, the human body is a "wonderful machine," the brain is a computer, and science fiction movies present robots with personalities, just like ours. But if we are machines, then our lives must be some (as yet unexplained) mechanistic process; and value and meaning must be illusions, or worse, variables to be measured and manipulated. As values and meaning erode, we become increasingly cynical and materialistic. We develop scientific techniques to study and manipulate employees, consumers, and political constituents. With nothing higher to reach for, we seek meaning and identity in what we own. Social cohesion breaks down and we become passive consumers, disconnected from each other, just as the unit model described.

It is difficult to stop this destructive process as long as we assume that everything is made of separate inanimate parts. Because "everything" includes us, the success of science seems to "prove" that we are inanimate too. To the extent that we are sure of science, we tend to overlook those aspects of experiencing that science leaves out. The unit model tells us who we are, and to

our detriment, we believe it. In the words of Allan Bloom (1987), "progress culminates in the recognition that life is meaningless."

A New Way of Thinking

The key to this problem lies in the lesson Gendlin learned from his first grade teacher. There is an intricate experiencing, not only behind words like "chair" or "stuhl," but also also behind concepts and conceptual systems. Models are just models; they are not reality, even when they work extremely well. Good models make everything seem very precise, but there is always a great deal more in experiencing that remains implicit.

This can be dangerous because it is easy to mistake concepts for reality; the history of science is filled with examples of smart observant people who ignored phenomena that didn't fit their preconceptions. We can't afford to do this with the unit model any longer, because what the unit model leaves out is too important. It leaves out us.

We need a new way of thinking. We need to think about the full intricacy of life, including ourselves, in ways that are not reductionistic.

But this is not easy. Because living is more intricate than concepts, any conceptual model must necessarily leave something out. For this reason, we need more than just a new set of concepts. We need a new way of thinking, a way to use concepts that somehow includes what concepts leave out. In other words, we need to think in a way that includes the Implicit.

That alone would be hard enough, but as we think with the Implicit, we also need to keep the precision of the unit model, because vague concepts do not advance understanding. And there were good reasons to think this kind of precision was impossible.

On one level, it was always assumed that that what doesn't fit our concepts is necessarily too vague or chaotic for conceptual analysis. For example, experiences like writing a poem or falling in love are either completely off limits for systematic inquiry, or else we accept simplistic two-dimensional portrayals and declare whatever was left out to be off limits.

But this is just one aspect of an even deeper problem. As we saw, it is the nature of living things to imply a next step; so if we are going to think about living, we'll need to think about implying. But unlike love or poetry, implying isn't even a thing we can point to; it is a kind of movement toward something unspecified. Because implying is implicit, it appeared to be out of bounds for clear, explicit thinking.

In short, it had always been assumed that precisely cut and defined entities are the basis for precise thinking. This assumption has been very costly, because it has meant the most important aspects of human existence—values, purpose in life, love, spirituality, even living itself—were too vague and "subjective" for precise thinking.

But the assumption turned out to be wrong.

As a philosopher, Gendlin understood kinds of concepts in the same way that architects

understand *kinds* of buildings. Knowing the strengths and limitations of different kinds of concepts, Gendlin designed new concepts, a new model, and a new way of thinking

The Philosophy of the Implicit

Gendlin described this new way of thinking in his book <u>Experiencing and the Creation of</u> <u>Meaning</u> (paperback edition 1977). Among other things, he showed that concepts have a structure that is derived from implying, and that there is an orderly but more-than-logical relationship between concepts and the Implicit. This made it possible to develop a method for concepts to interact with the Implicit, so that concepts can retain and even increase their precision, while changing in a systematic way to include aspects of the Intricacy that had been left out.

Then, in <u>A Process Model</u>, Gendlin (1997) showed how this new method can be used to create new concepts. *A Process Model* develops a single coherent set of concepts that are derived from the experience of living, instead of from mathematics. Radically different from the unit model, the *Process Model* develops concepts to think about life; the new concepts are very precise yet widely applicable, offering useful and researchable insights into numerous problems such as the evolution of life, the nature of language, the incompatibility of relativity theory and quantum physics, and the nature of spiritual experience.

Like any seminal model, *A Process Model* invites a new kind of experiencing. In the words of one reader, "It is no exaggeration to say that my sense of who and what I am, and what the universe is, has radically changed in a beautiful and exciting way." However, Gendlin believes that the *Process Model*'s most important contribution is not the concepts themselves, but how they were derived. He repeatedly advises his readers not to accept *A Process Model* as truth. He intends this book as a demonstration of his new method of thinking, and he predicts that better models will be developed in the future.

Because Gendlin's method and the resulting concepts really are new, Western readers find them difficult to grasp (it is interesting that Gendlin has a large following in Japan, where his method and concepts seem to be more in tune with the traditional culture and philosophy). Gendlin asks us to make a shift comparable to the shift from the medieval to the scientific world-view (c.f. Kuhn, 1970). But although it is hard work, making the shift is enormously rewarding because it enables us to think in new and productive ways about science, spirituality, and life.

More importantly, it enables us to use concepts in a new way. We don't have to think with just one model, and be trapped by its limitations. Because there is an orderly relationship between concepts and the Implicit, we can use concepts in a precise and systematic way that includes the Implicit. By including the Implicit, we can use different models, taking what is useful in each, without being bound by its limitations. As Gendlin learned when he was 12, everything doesn't have to be just a "stuhl" or just a "chair." We don't have to translate anymore.

Practical Applications

Gendlin has published over 240 professional articles and books. His philosophy cannot be described easily, but some of its applications can.

- 1. *Focusing* is a teachable procedure that anyone can use to access the deeper, implicit knowing that comes with having lived with a problem or situation. Originally intended to help clients do better in psychotherapy, it is now used by thousands of non-therapists around the world.
- 2. *Spirituality*: Gendlin's philosophy is deeply spiritual, but it contains very little spiritual or religious language. The reason is simple: Gendlin wants his readers to explore beyond their usual concepts, whether they be concepts of religious belief or of atheism. He wants to evoke in his readers the actual basis for spiritual experience, the Implicit itself.

Focusing, in particular, has helped many people discover or deepen the spirituality dimension of their lives. By its nature, Focusing invites people to live their spirituality in practical ways. For example, Focusing is currently being used in <u>Pakistan</u> and <u>Afghanistan</u> to help aid workers and trauma survivors; practitioners find that it integrates beautifully with their practice of <u>Islam</u>.

But Focusing has powerful results in any religious tradition; as spiritual awareness deepens, words and rituals that had seemed completely empty for many years, suddenly open up into whole new worlds of meaning. Focusing is currently being used in a variety of religious traditions, including Judaism, Christianity, Buddhism, Zen Buddhism, and Islam. Additional information is available on the Focusing Institute's Spirituality web page.

- 3. <u>Thinking at the Edge (TAE)</u> is a way of developing implicit knowing into an articulate theory. For example, a professional might have an inchoate felt sense about a technical problem. Using TAE, one can articulate this implicit knowledge and use it to generate explicit concepts, or even a formal theory, that others can use. TAE is currently being taught and applied in a variety of settings ranging from business to psychotherapy.
- Research: In addition to research already completed in fields like psychotherapy (<u>Hendricks, 2002</u>) and education (Zimring 1983, 1985; Zimring & Katz, 1988), Gendlin's philosophy presents profound and researchable challenges to conventional thinking in fields as diverse as genetics (Gendlin, 1997, pp. 882-3), physics (<u>Gendlin, E.T. & J.</u> <u>Lemke, 1983</u>), linguistics and anthropology (Gendlin, 1997, pp. 122-215).
- 5. Changing the mechanistic world-view: Materialistic science pervades our thinking, with negative effects. Gendlin's philosophy challenges this at all levels. For example, in <u>A</u><u>Process Model</u>, Gendlin criticized the neo-Darwinian theory of evolution by showing that life could not have evolved only passively and mechanistically, and he predicted that other specific processes must be involved. When the first edition of *A Process Model* came out in 1981, Gendlin's claim seemed outrageous. Today, Gendlin's view is

beginning to receive empirical support as researchers discover that under stressful conditions, organisms appear to participate actively in their own evolution (e.g., <u>Ben-Jacob, E., 1998</u>; Lolle et al., 2005).

Major Writings

Gendlin has over <u>240 publications</u>. His two major philosophical works are <u>Experiencing and the</u> <u>Creation of Meaning</u>, which develops explicit ways of approaching the Implicit; and <u>A Process</u> <u>Model</u>, which demonstrates this method by developing a body of consistent concepts for thinking about living process, with implications for our thinking about space, time, science, genetics, ethology, consciousness, language, and spirituality.

Gendlin's other major works include:

- <u>Crossing and Dipping</u>: Some Terms for Approaching the Interface between Natural Understanding and Logical Formulation
- The Responsive Order: A New Empiricism
- <u>The Primacy of the body, not the primacy of perception</u>: *How the body knows the situation and philosophy*
- Thinking Beyond Patterns: Body, Language, and Situations
- *How philosophy cannot appeal to experience, and how it can* (in D.M. Levin [Ed.], *Language beyond postmodernism: saying and thinking in Gendlin's philosophy*, pp. 3-41).

References

Ben-Jacob, E. (1998). <u>Bacterial wisdom, Godel's theorem and creative genomic webs</u>. *Physica* A 248, 57-76.

Ben-Jacob, E., Aharonov, Y., & Shapira, Y. (2004). <u>Bacteria harnessing complexity</u>. *Biofilms* 1, 239–263 (doi:10.1017/S1479050505001596)

Ben-Jacob, E., & Levine, H. (2005). <u>Self-engineering capabilities of bacteria</u>. J. R. Soc. Interface (doi:10.1098/rsif.2005.0089) Published online

Ben-Jacob, E., & Shapira, Y. (in press). <u>Meaning-based natural intelligence vs. information-based artificial intelligence</u>. In Cradle of Creativity (2005).

Ben-Jacob, E., Shapira, Y., & Tauber, A. I. (2006). <u>Seeking the foundations of cognition in</u> <u>bacteria</u>: From Schrödinger's Negative Entropy to Latent Information. Physica A vol 359 ; 495-524.

Dreyfus, H. L. (1992). *What computers still can't do: a critique of artificial reason*. London: MIT Press.

Dreyfus, H.L., & Dreyfus, S. E. (1986). Mind over machine. New York: The Free Press.

Gendlin, E.T. (1962). <u>Experiencing and the creation of meaning</u>. *A philosophical and psychological approach to the subjective*. New York: Free Press of Glencoe. (Reprinted by Macmillan, 1970; reprinted in paperback by Northwestern University Press, 1997)

Gendlin, E.T. (1991). <u>Crossing and dipping</u>: some terms for approaching the interface between natural understanding and logical formulation. In M. Galbraith & W.J. Rapaport (Eds.), *Subjectivity and the debate over computational cognitive science*, pp. 37-59. Buffalo: State University of New York. Reprinted in *Minds and Machines*, 1995, *5* (4), 547-560.

Gendlin, E.T. (1991). <u>Thinking beyond patterns</u>: body, language and situations. In B. den Ouden & M. Moen (Eds.), *The presence of feeling in thought*, pp. 25-151. New York: Peter Lang.

Gendlin, E.T. (1992). <u>The primacy of the body</u>, not the primacy of perception. *Man and World*, 25 (3-4), 341-353.

Gendlin, E. T. (1997). <u>A process model</u>. New York: The Focusing Institute

Gendlin, E.T. (1997). How philosophy cannot appeal to experience, and how it can. In D.M. Levin (Ed.), *Language beyond postmodernism: Saying and thinking in Gendlin's philosophy*, pp. 3-41 & 343. Evanston: Northwestern University Press.

Gendlin, E.T. (1997). <u>The responsive order</u>: A new empiricism. *Man and World*, *30* (3), 383-411.

Gendlin, E. T. (2004). An Introduction to Thinking at the Edge. The Folio, 19 (1)

Gendlin, E. T., Beebe, J., Cassens, J., Klein, M., & Oberlander, M. (1968). Focusing ability in psychotherapy, personality, and creativity. In J.M. Shlien (Ed.), 1968. *Research in psychotherapy. Vol. III*, pp. 217-241. Washington, DC: APA.

Gendlin, E.T. & Lemke, J. (1983). <u>A critique of relativity and localization</u>. *Mathematical Modelling*, *4*, 61-72.

Hendricks, M. N. (2002). <u>Focusing-oriented/experiential psychotherapy</u>. In Cain, David and Seeman, Jules (Eds.) *Humanistic Psychotherapies: Handbook of Research and Practice* (pp. 221-251). Washington, DC: American Psychological Association.

Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago: University of Chicago Press.

Lolle, S. J., Victor, J. L., Young, J. M. and Pruitt, R. E. (2005). Genome-wide non-mendelian inheritance of extra-genomic information in Arabidopsis. *Nature*, *434*, 505–509.

Zimring, F. R. (1983). Attending to feelings and cognitive performance. *Journal of Research and Personality*, *17* (3) 288-299.

Zimring, F. R. (1985). The effect of attending to feeling on memory for internally generated stimuli. *Journal of Research and Personality, 19* (2) 170-184.

Zimring, F. R., & Katz, K. (1988). Self-focus and relational knowledge. *Journal of Research and Personality*, 22 (3) 273-289.